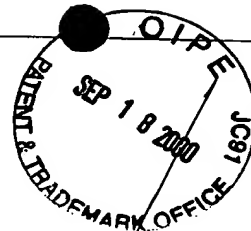


SEQUENCE LISTING



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SEP 27 2000

TECH CENTER 1600/2960

<110> MENOZZI, Franco
LOCHT, Camille

<120> IDENTIFICATION AND CLONING OF A MYCOBACTERIAL ANTIGEN
CORRESPONDING TO A HEPARIN-BINDING HAEMAGGLUTININ

<130> 960-34

<140> 09/192,579

<141> 1998-11-17

<150> FR 96 06168

<151> 1996-05-17

<160> 20

<170> PatentIn Ver. 2.1

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<210> 1

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: peptide
sequence comprising a region involved in
interactions with sulphated glycoconjugates and in
heparin binding

<400> 1

Lys Lys Ala Ala Pro Ala Lys Lys Ala Ala Pro Ala Lys Lys Ala Ala
1 5 10 15

Pro Ala Lys Lys Ala Ala Ala Lys Lys Ala Pro Ala Lys Lys Ala Ala
20 25 30

Ala Lys Lys Val Thr Gln Lys
35

<210> 2

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: peptide S1441

<400> 2

Lys Ala Glu Gly Tyr Leu Glu Ala Ala Thr
1 5 10

<210> 3
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: peptide S1443

<400> 3
Xaa Glu Gly Tyr Val Asp Gln Ala Val Glu Leu Thr Gln Glu Ala Leu
1 5 10 15
Gly Lys

<210> 4
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: peptide S1446

E
<400> 4
Xaa Gln Glu Xaa Leu Pro Glu Xaa Leu
1 5

CK
ht
<210> 5
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide S1447

<400> 5
Phe Thr Ala Glu Glu Leu Arg
1 5

<210> 6
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide originated from the S1441 peptide
(oligo S1441)

<400> 6
aaggcsgagg/gstacct

17

<210> 7
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide originated from the S1441 peptide
(reverse oligo S1441)

<400> 7
aggtascct csgcctt

17

<210> 8
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide originated from the S1443 peptide
(oligo S1443)

<400> 8
gaccaggcsg tsgagct

17

E1
C1
n1
<210> 9
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide originated from the S1443 peptide
(reverse oligo S1443)

<400> 9
agctcsacsg cctggctc

17

<210> 10
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
Oligonucleotide named HBHASEq1 and used for
sequencing the gene coding for HBHA

<400> 10
agccggtaca accgagctggt c

21

<210> 11
<211> 21
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide named HBHA Seq1inv and used for
sequencing the gene coding for HBHA

<400> 11
gaccagctcg ttgtaccggc t

21

<210> 12
<211> 19
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide named HBHASEq2 and used for
sequencing the gene coding for HBHA

<400> 12
catccaacac gtcgactcc

19

E1

<210> 13
<211> 19
<212> DNA
<213> Artificial Sequence

<220>

Q1
21

<223> Description of Artificial Sequence:
Oligonucleotide named HBHA Seq3 and used for
sequencing the gene coding for HBHA

<400> 13
ttgatgtcat caatgttcg

19

<210> 14
<211> 19
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide named HBHA Seq4 and used for
sequencing the gene coding for HBHA

<400> 14
cgtggaccag gcggtggag

19

<210> 15
<211> 21
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide named HBHA Seq 5 and used for
sequencing the gene coding for HBHA

<400> 15
gacgatcagg aggtttcccc g

21

<210> 16
<211> 24
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
Oligonucleotide named reverse primer and used for
sequencing the gene coding for HBHA

E1
<400> 16
agcggataac aatttcacac agga

24

<210> 17
<211> 149
<212> DNA
<213> Artificial Sequence

~~OK~~
<220>

<223> Description of Artificial Sequence: nucleotide
sequence and amino sequence of a fragment of HBHA
deduced from a PCR fragment of chromosomal BCG DNA

<220>
<221> CDS
<222> (1)..(147)

<400> 17
aag gcc gag ggc tac ctc gag gcc gcg act agc cgg tac aac gag ctg 48
Lys Ala Glu Gly Tyr Leu Glu Ala Ala Thr Ser Arg Tyr Asn Glu Leu
1 5 10 15

gtc gag cgc ggt gag gcc gct cta gag cgg ctg cgc agc cag cag agc 96
Val Glu Arg Gly Glu Ala Ala Leu Glu Arg Leu Arg Ser Gln Gln Ser
20 25 30

ttc gag gaa gtg tcg gcg ccc gcc gaa ggc tac gtg gac cag gcg gtc 144
Phe Glu Glu Val Ser Ala Pro Ala Glu Gly Tyr Val Asp Gln Ala Val
35 40 45

gag ct 149
Glu

<210> 18
 <211> 49
 <212> PRT
 <213> Artificial Sequence
 <223> Description of Artificial Sequence: amino sequence of a
 fragment of HBHA deduced from a PCR fragment of chromosomal
 BCG DNA

<400> 18
 Lys Ala Glu Gly Tyr Leu Glu Ala Ala Thr Ser Arg Tyr Asn Glu Leu
 1 5 10 15
 Val Glu Arg Gly Glu Ala Ala Leu Glu Arg Leu Arg Ser Gln Gln Ser
 20 25 30
 Phe Glu Glu Val Ser Ala Pro Ala Glu Gly Tyr Val Asp Gln Ala Val
 35 40 45
 Glu

<210> 19
 <211> 1097
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: DNA sequence
 of the BCG gene coding for HBHA

<220>
 <221> CDS
 <222> (331)..(924)
 <223> CDS from 811 to 828, from 829 to 846, from 847 to
 864, from 865 to 885 and from 895 to 915 : peptide
 which may be particularly involved in interactions
 with sulphated glycoconjugates

<400> 19
 cggctggcgg gtaatcaaac ctgaaggaca gtcactctggg tgaggtcgac cgcaggctga 60
 tccagccgat cggccggcgc tggccaacag cgactccgtc gatgacgtgc agcaaaggag 120
 acatgtagtg accggatcag ctgggcctga catctacgaa ctcgaccgac aaccgaccgg 180
 acgatcagga ggtttccccg gcaagtcgcg tgccatgtca atccgcgggt cttgactagt 240
 cctccctgga ggagccgacg cttgccccaa cgtccagacc aaagatgtaa gaacgccgat 300
 atcagaaaat agttaatgaa aggaataccc atg gct gaa aac tcg aac att gat 354
 Met Ala Glu Asn Ser Asn Ile Asp
 1 5
 gac atc aag gct ccg ttg ctt gcc gcg ctt gga gcg gcc gac ctg gcc 402
 Asp Ile Lys Ala Pro Leu Leu Ala Ala Leu Gly Ala Ala Asp Leu Ala
 10 15 20

ttg gcc act gtc aac gag ttg atc acg aac ctg cgt gag cgt gcg gag 450
 Leu Ala Thr Val Asn Glu Leu Ile Thr Asn Leu Arg Glu Arg Ala Glu
 25 30 35 40
 gag act cgt acg gac acc cgc agc cgg gtc gag gag agc cgt gct cgc 498
 Glu Thr Arg Thr Asp Thr Arg Ser Arg Val Glu Glu Ser Arg Ala Arg
 45 50 55
 ctg acc aag ctg cag gaa gat ctg ccc gag cag ctc acc gag ctg cgt 546
 Leu Thr Lys Leu Gln Glu Asp Leu Pro Glu Gln Leu Thr Glu Leu Arg
 60 65 70
 gag aag ttc acc gcc gag gag ctg cgt aag gcc gcc gag ggc tac ctc 594
 Glu Lys Phe Thr Ala Glu Glu Leu Arg Lys Ala Ala Glu Gly Tyr Leu
 75 80 85
 gag gcc gcg act agc cgg tac aac gag ctg gtc gag cgc ggt gag gcc 642
 Glu Ala Ala Thr Ser Arg Tyr Asn Glu Leu Val Glu Arg Gly Glu Ala
 90 95 100
 gct cta gag cgg ctg cgc agc cag cag agc ttc gag gaa gtg tcg gcg 690
 Ala Leu Glu Arg Leu Arg Ser Gln Gln Ser Phe Glu Glu Val Ser Ala
 105 110 115 120
 ccc gcc gaa ggc tac gtg gac cag gcg gtg gag ttg acc cag gag gcg 738
 Pro Ala Glu Gly Tyr Val Asp Gln Ala Val Glu Leu Thr Gln Glu Ala
 125 130 135
 ttg ggt acg gtc gca tcg cag acc cgc gcg gtc ggt gag cgt gcc gcc 786
 Leu Gly Thr Val Ala Ser Gln Thr Arg Ala Val Gly Glu Arg Ala Ala
 140 145 150
 aag ctg gtc ggc atc gag ctg cct aag aag gct gct ccg gcc aag aag 834
 Lys Leu Val Gly Ile Glu Leu Pro Lys Lys Ala Ala Pro Ala Lys Lys
 155 160 165
 gcc gct ccg gcc aag aag gcc gct ccg gcc aag aag gcg gcg gcc aag 882
 Ala Ala Pro Ala Lys Lys Ala Ala Pro Ala Lys Lys Ala Ala Ala Lys
 170 175 180
 aag gcg ccc gcg aag aag gcg gcg gcc aag aag gtc acc cag 924
 Lys Ala Pro Ala Lys Lys Ala Ala Ala Lys Lys Val Thr Gln
 185 190 195
 aagtagtcgg gctccgaatc accatcgact ccgagtcgcc cacggggcgga ctcggagtcg 984
 acgtgttgga tgcaaaccgc atagcttgaa tgcgtgagcc acctcgtggg taccgtcatg 1044
 ctggtattgc tggtcgccgt ctgggtgaca gcggtgtacg cgtttgtgca tgc 1097

<210> 20
 <211> 198
 <212> PRT
 <213> Artificial Sequence
 <223> Description of Artificial Sequence: DNA sequence
 of the BCG gene coding for HBHA

<400> 20
 Met Ala Glu Asn Ser Asn Ile Asp Asp Ile Lys Ala Pro Leu Leu Ala
 1 5 10 15

Ala Leu Gly Ala Ala Asp Leu Ala Leu Ala Thr Val Asn Glu Leu Ile
 20 25 30
 Thr Asn Leu Arg Glu Arg Ala Glu Glu Thr Arg Thr Asp Thr Arg Ser
 35 40 45
 Arg Val Glu Glu Ser Arg Ala Arg Leu Thr Lys Leu Gln Glu Asp Leu
 50 55 60
 Pro Glu Gln Leu Thr Glu Leu Arg Glu Lys Phe Thr Ala Glu Glu Leu
 65 70 75 80
 Arg Lys Ala Ala Glu Gly Tyr Leu Glu Ala Ala Thr Ser Arg Tyr Asn
 85 90 95
 Glu Leu Val Glu Arg Gly Glu Ala Ala Leu Glu Arg Leu Arg Ser Gln
 100 105 110
 Gln Ser Phe Glu Glu Val Ser Ala Pro Ala Glu Gly Tyr Val Asp Gln
 115 120 125
 Ala Val Glu Leu Thr Gln Glu Ala Leu Gly Thr Val Ala Ser Gln Thr
 130 135 140
 Arg Ala Val Gly Glu Arg Ala Ala Lys Leu Val Gly Ile Glu Leu Pro
 145 150 155 160
 Lys Lys Ala Ala Pro Ala Lys Lys Ala Ala Pro Ala Lys Lys Ala Ala
 165 170 175
 Pro Ala Lys Lys Ala Ala Ala Lys Lys Ala Pro Ala Lys Lys Ala Ala
 180 185 190
 Ala Lys Lys Val Thr Gln
 195